# Building 779 Cluster Closure Project

## Health And Safety Plan

Developed by:
Rocky Mountain Remediation Services, L.L.C.
Safe Sites of Colorado, L.L.C.

REVISION II

January 16, 1998

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# BUILDING 779 CLUSTER DECOMMISSIONING PROJECT HEALTH AND SAFETY PLAN

## REVISION II

## January 16, 1998

This Health And Safety Plan has been reviewed and approved by:

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## ACRONYMS

| | |
|---|---|
| AB | Authorization Basis |
| ACM | Asbestos Containing Material |
| AHERA | Asbestos Hazard Emergency Response Act |
| AHA/JHA | Activity Hazard Analysis or Job Safety Analysis (JSA) |
| ALARA | As Low As Reasonably Achievable |
| Be | Beryllium |
| CFR | Code Of Federal Regulations |
| D&D | Decontamination And Decommissioning |
| DOE | U. S. Department Of Energy |
| ESH&Q | Environmental Safety Health And Quality |
| EWP | Enhanced Work Planning |
| HASP | Health And Safety Plan |
| HSP | Health And Safety Practices |
| IH&S | Industrial Hygiene And Safety |
| ISM | Integrated Safety Management |
| IWCP | Integrated Work Control Program |
| JHA | Job Hazard Analysis |
| LCO | Limiting Condition of Operation |
| LO/TO | Lockout/Tagout |
| LS/DW | Life Safety/Disaster Warning |
| MAP | Management Assessment Program |
| OSHA | Occupational Safety And Health Administration |
| PCB | Polychlorinated Biphenyl |
| PM | Project Manager |
| PPE | Personal Protective Equipment |
| PHA | Preliminary Hazards Analysis |
| RCM | Radiological Control Manual |
| RCT | Radiological Control Technician |
| RFETS | Rocky Flats Environmental Technology Site |
| RMRS | Rocky Mountain Remediation Services, L. L. C. |
| RWP | Radiological Work Permit |
| SSOC | Safe Sites of Colorado, L.L.C. |

# 1. GENERAL INFORMATION

## *1.1 Scope And Applicability*

The purpose of this Health And Safety Plan (HASP) is to identify, mitigate, and control/eliminate potential safety and health hazards associated with the Building 779 Closure Project. Procedures and controls will be identified in this HASP that will help prevent and reduce the risk of personnel injury and/or illness and property and/or environmental damage/impacts. This HASP is applicable to all decommissioning work related activities performed on Building 779 and its supporting facilities. Major activities include, but are not limited to:

- Sampling, characterization, and removal of chemical, hazardous, and radiological materials and waste
- Glovebox and associated equipment and utilities removal
- Major decontamination activities
- Building and structure dismantlement

All project personnel and subcontractors will utilize the 779 Closure Project Health & Safety Plan, subcontractor safety plans, Contract Section 01700, U. S. Department of Energy (DOE) Orders 5480.9a (to be replaced by 440.1), the DOE Hoisting and Rigging Manual, the DOE Construction Manual, the DOE Handbook For Occupational Health And Safety During Hazardous Waste Activities, as the upper tier documents to govern health and safety of the workers during the decommissioning process. Occupational Safety And Health Act (OSHA) Standards 29 Code of Federal Regulations (CFR) 1910 and 1926 will be utilized in conjunction with other approved company and subtier-specific documents (such as applicable Health and Safety Practices Manual procedures) to ensure worker protection and safety. From a radiological standpoint, the DOE Radiological Control Manual (RCM), 10 CFR 835 and the RFETS-specific RCM (Site RCM) will be utilized for worker radiological safety.

No task (excluding walkdowns or general work tasks such as LCO, Non-LCO surveillances and other tasks as designated by the Technical Support Manager) will be performed in support of this project until an Activity Hazard Analysis (AHA/JHA) (reference Appendix A) or a Job Hazards Analysis (JHA) has been written and approved that addresses the task or activity. The AHA/JHA will identify the principal steps involved and the sequence of work activities, the potential safety and health hazards associated with each step, the specific controls associated with each potential hazard, the task-specific special equipment to be used in performing the activity, and monitoring.

## *1.2 Project Description*

The scope of the project consists of the removal of numerous components, associated equipment, and building structure materials in 12 buildings which contain the following type of materials:

- Lead lined gloveboxes

- Non lead lined gloveboxes
- All associated utilities
- Piping, valves, panels, and other structural components
- Ventilation ducting and hoods
- Miscellaneous containers, furnaces, tool boxes, and drums
- Any other items or components to allow total decommissioning of the rooms. This can include: characterization activities, decontamination of equipment and building structures, draining and decontamination of piping, removal of concrete structures, ceiling tiles, framing, filters, room bracing, etc.

This project will result in the generation of hazardous, mixed, low-level waste, industrial, and transuranic wastes as described in the project's Waste Management Plan. The project has conducted a Reconnaissance Level Characterization that identified hazardous, chemical, and radiological contaminants in the various rooms and structures. As equipment is being removed from these rooms and structures, additional characterization surveys will be performed as required. The determination to perform additional surveys will be based on work package development needs and specific findings as work is performed (e.g., performing further Beryllium surveys as equipment is removed from a room in which beryllium was known to have existed).

# 2. Health & Safety Strategy

Safety is the primary concern at the site. Worker health and safety, always a DOE and contractor concern, has been elevated in recent years to even more important status. Often, worker safety and health aspects of older facility safety documentation will prove to be the area wherein such documentation falls short of modern standards. It is extremely important that worker safety and health considerations, comparable to or exceeding the levels demanded by OSHA, be incorporated into newer revisions or supplements of safety documentation.

The Defense Nuclear Facility Safety Board Technical Report # 15, *Operational Formality for Department of Energy Nuclear Facilities and Activities* describes two key items that must be developed, understood and agreed upon in order to achieve the required formality of operations to perform closure work:

- the analysis of a specific scope of work and resulting controls to form the basis for ensuring safe nuclear operations and
- the adoption of practices or safety program commitments to ensure that the work is performed to generally accepted safety standards

These tailored controls and other safety-related commitments are identified and applied to a defined scope of work. Defense in depth is implemented primarily though a series of barriers that should never be jeopardized before harm can occur to people or the environment.

In addition to the above principles, the Authorization Basis (AB) must facilitate site closure (i.e. the AB is concise enough to allow line managers to safely and efficiently perform work).

Therefore the health and safety strategy consists of the following:

An integrated safety management process will be implemented that is structured around five core principles : (1) define the scope of work; (2) analyze hazards; (3) develop and implement controls; (4) perform work within controls; and (5) provide feedback and continuous improvement. The process will facilitate work by identifying key hazards up front and incorporating risk management into the job planning process.

## *2.1 Authorization Basis Strategy*

The majority of the existing AB documentation at Rocky Flats requires changes and references to supporting programs in order to safely perform facility closure activities. The Category 2 Nuclear Facility to be closed will have the Authorization Basis modified to address the defined scope of closure work qualitatively judged to pose the bounding hazards associated with closure. This will establish a safety envelope with a suite of controls adequate to address known hazards of anticipated closure activities.

### 2.1.1 Reduction of Controls

The Authorization Basis controls will contain the tailored set of safety management system elements necessary to protect personnel and the environment during facility closure. Each major infrastructure program (configuration control, quality assurance, conduct of

operations, radiological control, etc.) will be addressed as required by the supporting analysis.

The Authorization Bases will enable this graded approach through three methods:

- Limiting Conditions of Operations (LCOs) with applicability statements, or other appropriate permissives to allow controls to be eliminated as the hazard is eliminated.

- Where possible, the safety bases will rely on site infrastructure programs, which utilize a graded approach so that when the hazard is eliminated, the control is eliminated. For example, as contamination areas are decontaminated, the surveys and controls required by the Radiation Control Program will be eliminated as well.

- In instances where controls are not explicitly addressed by detailed applicability statements, exceptions or permissives, the OSR page change would be utilized to revise (delete/reduce) the required control as hazards are eliminated. The JCO process could also be used to address non-compliance with the required controls.

At some point in the facility closure, it is expected that the Authorization Basis will contain only the program controls necessary to protect the worker against normal industrial hazards in a radiological facility. Because of the low amounts of Plutonium necessary to recategorize Category 2 nuclear facilities to Category 3 nuclear facility, or recategorize Category 3 nuclear facilities to radiological facility status, it would be extremely difficult to change status until late in the closure process. However with few or no nuclear facility controls (e.g. LCOs), there would be little efficiency gained through category changes, since the controls would have already been eliminated, and cost savings are minimal.

### 2.1.2 Evaluation of new activities/hazards

Closure activities not specifically addressed by the AB will be evaluated against that envelope using the unreviewed safety question (USQ) process. The AB controls suite will be adjusted as respective hazards are reduced or new ones introduced. The authorization basis safety envelope may require adjustment (via the USQ or the annual AB update process) with RFFO concurrence as configuration of the facility is changed, new activities are planned, or new hazards are identified. The work will be performed under the defined safety controls and programs by trained workers. Reviews and authorization to proceed with activities will ensure recognition of the AB safety envelope. The nature of closure activities requires continuous reviews and feedback to verify proper hazard identification and operational controls. Through these reviews, process improvements are expected. The facility maintains the current approved safety bases for Bldg. 779.

## *2.2 Criticality Safety*

Building 779 currently has full criticality detector coverage for rooms/areas requiring coverage. Then, as criticality risks are reduced, an evaluation will be performed to evaluate the quantity, location, and form of fissile material within the facility, along with the nature of activities to be performed. Based on this evaluation, engineering judgment and calculations will be used to determine the feasibility of a criticality incident. When enough material has been removed to determine that the potential for a criticality is not credible, the system will be taken out of service. Communications with employees (i.e., via All Hands

briefings, Pre-Evolution briefings, etc.) will be a crucial component of these changes within the facility.

## 2.3 Overview of Hazards

A number of hazards are already known to exist in the Building 779 facility. The main hazard is radiological contamination. Building 779 was a research and development facility since the mid 1960's. During that period, a number of leaks and spills have occurred. It has always been standard operating practice to decontaminate an area after an upset event, although the level of decontamination is often not known. Measuring these levels today, after layers of paint, and in the presence of elevated background radiation levels would reveal only the hot spots. It will therefore be assumed that an area is contaminated, unless otherwise known and verified.

A number of chemicals have been used in Building 779. Most of these chemicals are documented and have been removed. The remainder of the chemicals in the facility are believed to have been identified and entered in the chemical tracking system.

Beryllium is known to be left from past operations, although in a limited number of gloveboxes. Machine, hydraulic, and lubricating oil and greases exist in various machines, gearboxes, and equipment. PCB is also likely to be encountered in equipment and electrical devices. Due to the age of the facilities, considerable amounts of asbestos are present in the insulation and building materials. Lead is also present in the glovebox shielding, and some of the building materials.

Aside from the radiological and chemical hazards, Building 779 has the normal industrial hazards expected of any chemical processing/lab area.

## 2.4 Characterization Overview

As part of the Health and Safety Program, site characterization and analysis is currently being performed and will continue to be performed throughout the D&D process of 779. Four major areas are continually being reviewed and characterized, which includes: asbestos, beryllium, lead and radiological conditions. As other materials or hazards are encountered during the D&D process, they will be characterized accordingly.

### 2.4.1 Asbestos

The Building 779 cluster has been inspected for the presence of asbestos containing materials (ACM). the asbestos inspection was conducted according to the guideline set forth by the Asbestos Hazard Emergency Response Act (AHERA), and complies with Occupational Safety and Health Administration (OSHA) and the State of Colorado regulations (Regulatory Guide 8) covering asbestos inspections.

### 2.4.2 Beryllium

A baseline characterization survey has been conducted in Building 779 for the presence of beryllium. Over 850 surface smears have been taken in beryllium suspect and non-suspect areas.

Currently RFETS has established a housekeeping surface contamination maximum level of 25 micrograms of beryllium per square foot ($\mu g/ft^2$). The Building 779 Closure Project has established a housekeeping maximum level of (10 $\mu g/ft^2$). Specific controls, work practices and decon requirements will be established for each task. Controls and PPE will be identified in the appropriate AHAs/JHAs.

### 2.4.3 Lead

Lead characterization in Building 779 is currently being conducted in suspect areas of the 779 Cluster. As lead contaminated areas are identified they will be remediated in accordance with 29 CFR 1926.62 which is the lead construction standard.

Additionally work activities in lead suspect or lead contaminated areas will be performed in accordance with the project specific lead compliance plan(s).

### 2.4.4 Radiological Conditions

Radiological surveys in the 779 Cluster will be a continuous and on-going process. Suspect and non-suspect areas will be surveyed to confirm past historical results. Process knowledge and routine surveillance surveys will continue to be performed throughout the D&D process.

In addition to designated characterization surveys, individual work tasks will require specific radiological surveys. All work activities involving radiological hazards will be governed by a radiological work permit (RWP) with current survey data.

## *2.5 Worker Safety*

Worker involvement is also a key consideration and significant lessons learned from other DOE facilities. Worker involvement and a graded approach to the levels of safety analysis required for various deactivation tasks are keys to making the safety analysis process useful, efficient, and satisfactory to all concerned. The graded approach is cost effective in that it does not demand a high level of analysis for simple jobs already covered in established procedures. Worker involvement is also cost-effective in that it provides a higher level of assurance that workers are participating willingly and without hesitation in the jobs that are required for facility deactivation.

Safety will be enhanced through the implementation of several key programs:

- Management Leadership and Employee Participation
  Establishment of safety councils, sharing of lessons learned, Management Safety Walkdowns, Safety Meetings, Employee Recognition
- Workplace Analysis
  Development of Activity Hazard Analyses, Safety Inspections
- Accident and Record Analysis
  Accident Investigations, Tracking and Trending of safety data
- Hazard Prevention and Control
  Evaluation of work areas, Activity Hazard Analyses, implement controls
- Emergency Response
  Conduct drills/exercises, reinforce proper response to emergencies
- Safety and Health Training

### 2.5.1 Enhanced Work Planning

Enhanced Work Planning (EWP) is the natural implementing vehicle to involve workers, and to incorporate the five key elements of the Defense Nuclear Facility Safety Board recommendation 95-2. These key elements -- work scope reviewed and prioritized; work scope analyzed for hazards and categorized based on risk; controls established based on hazards, risk, and experience of workers; work performed safely, efficiently, with

appropriate degree of supervision; and continuous improvement and lessons learned -- encompass the essence of an effective, efficient, and safety conscience work process. EWP also serves as a tool to implement the Integrated Safety Management (ISM) process. The ISM process explains how safety is integrated into management and work practices at all levels.

The RFETS Enhanced Work Planning program is designed to provide a safer, more efficient work environment by:

- Encouraging worker participation in the initial work planning process to enhance the effectiveness of safety and work efficiency.
- Ensuring hazard analysis and controls are appropriate for the job.
- Improving worker knowledge of safety requirements.
- Fostering teamwork between hourly and salary personnel.
- Improving the technical accuracy and workability of work packages.
- Balancing the degree of work instruction, skill-of-craft, and worksite supervision.
- Reducing the overall time to plan, review, and approve work packages.
- Promoting realistic resource-loaded schedules.
- Enhancing job coordination and improving the efficient execution of the work.
- Continuous improvement through real-time feedback.

Enhanced Work Planning considers the entire work process and continually asks the questions necessary to implement a safer, more efficient work control process. However, in the traditional approach to the work control process, technical specialists, management, and workers are given work packages for review during various phases of the work planning process. When changes are made by one or more of the reviewers, the package must be reviewed again by all parties. This sequential review process is inefficient and tends to create conflict between planners, reviewers, and workers. Enhanced Work Planning is designed to improve the traditional work control process, primarily through extensive communication and feedback from the appropriate mix of personnel responsible for the work.

## *2.6 Integrated Safety Management (ISM)*

Each of the above subsections combine and work together to form the Integrated Safety Management process which is essential for safe operations at RFETS. This process establishes a single defined safety and environmental management system that integrates standards and requirements into the work planning and execution processes to effectively protect the public, worker, and the environment. K-H and its subcontractors are committed to using a single integrated system to perform all work safely at the site. This integrated system combines a diverse group of people and risk graded infrastructure programs to satisfy the multiple safety environmental and health needs uniformly. Figure 2-1 identifies the flowchart for implementation of the Integrated Safety Management Process.


**FIGURE 2-1**

As discussed in the previous section, a key to ensuring effective integration of safety systems is use of Enhanced Work Planning. With this approach, work teams consisting of D&D workers, RCTs, and other crafts as needed, are assigned to rooms or areas within the 779 Cluster. They work with the engineers and planners, through walkdowns and round-tables, to ensure the IWCP work packages provide the instructions and hazards controls they need to safety perform the work. Tools to assist the teams in this work planning include the AHA/JHA, combined with building characterization information. The team planning the work than ultimately executes the work. Their prior involvement assures their understanding of the work scope, the hazards and limitations of the work, and the controls required to ensure safe and proper performance of the work.

Using Figure 2-1, the Enhanced Work Planning process allows the work team to help define the scope of the work, and help identify the hazards that will be encountered and identify the controls needed, primarily through the AHA/JHA. The work team can then conduct the work activity in a safe and effective manner, due to their intimate involvement in the planning effort. Throughout this entire process, the team concept ensures feedback to planners, engineers, technical support personnel and management to ensure the next work activity can be performed more safely and efficiently.

### *2.7 Preliminary Hazard Analysis*

During the initial planning stages for the D&D of 779, a Preliminary Hazard Analysis Overview was conducted in accordance with 1-C18-HSP-24.01, "Construction Safety and Health Requirements" to evaluate the potential health and safety hazards for the project. This PHA includes an evaluation of the types of hazards associated with each phase of the project. Potential health hazards could include: lead, asbestos, radioactive materials, beryllium, acids or other hazardous materials, and/ or chemicals. Other potential hazards may include: hoisting and rigging, scaffolding usage, lockout/ tagout concerns, fall protection issues and confined space entries. Due to the potential hazardous materials and chemical exposure to the workers, characterization of asbestos, lead, beryllium, acids, Polychlorinated Biphenyls (PCBs), uranium, plutonium, and radioactive contaminates will be accomplished in accordance with approved Building 779 Reconnaissance Level Characterization survey plans and Site procedures.

## Table 2-1 Preliminary Hazard Analysis Overview

## Planning Phase

| Major Work Task | Hazard | Cause | Preventative Measures |
|---|---|---|---|
| Perform building walkdowns to identify IWCP work steps. | Tripping, falling, exposure to chemicals, hazardous substances and/or radioactive materials. Also, exposure to noise hazards. | No planning, lack of communicating between work groups, improper use of RWPs, not following room or building instructions. | • Develop AHAs/JHAs<br>• Conduct effective pre- evolution briefings<br>• Follow all building instructions<br>• Ensure all personnel have been properly trained before entry<br>• Adequate RWPs are developed and followed |
| Move office equipment and furniture to prepare for D&D activities. | Back strains, pinch points, extremity injuries due to falling objects or moving vehicles. | Improper lifting of equipment, careless handling of equipment, improper planning and walkdowns. No continuing observations or use of the buddy system. | • Proper training conducted and documented<br>• Use of the buddy system<br>• Proper use of forklifts and trucks including operating alarm systems and brakes<br>• Planning meetings and briefings completed<br>• Proper use of AHA/JHA<br>• Adequate RWPs are developed and followed |
| Perform hazard analysis characterization activities. This includes asbestos, Be, chemical, lead and radiological sampling. | Overexposure to substances, accidental inhalation of substances, absorption into skin of substances, eye and skin irritation. Exposure to radiological contamination. | Improper or no use of prescribed PPE, RWP lack of proper planning, not following sampling procedures correctly, improper transport or handling of samples. | • Follow AHA/JHA<br>• Wear prescribed PPE properly<br>• Conduct planning meetings and briefings<br>• Follow RWP<br>• Ensure all required training has been completed |

## Table 2-2 Preliminary Hazard Analysis Overview

## Abatement Phase - Asbestos/Lead

| Major Work Task | Hazard | Cause | Preventive Measures |
|---|---|---|---|
| Perform asbestos and lead abatement and clean up activities. | Exposure to asbestos airborne and surface contamination fibers that are lung hazards. Exposure to lead materials is hazardous to internal organs of the body. Exposure to radiological contamination. | Improper clean up techniques including: Improper tent , decontamination or PPE usage. Improper ventilation usage. Improper waste handling and disposal. Improper or no use of RWPs | •Obtain the services of a certified state abatement inspector or Certified Industrial Hygienist to plan and supervise the abatement project<br>•Ensure all workers are trained as asbestos workers<br>•Ensure all RFETS asbestos/lead prerequisites are met prior to job commencing<br>•Develop and implement an AHA(s)/JHA(s) for the job<br>•Ensure all medical, training and PPE prerequisites are met<br>•Ensure the proper air monitoring sampling is performed during the course of the job by IH&S personnel<br>•Ensure all posting and clearance sampling is performed<br>• Adequate RWP developed and followed |

## Table 2-3 Preliminary Hazard Analysis Overview

## Abatement Phase - Be/Radiological

| Major Work Task | Hazard | Cause | Preventative Measures |
|---|---|---|---|
| Perform Be decontamination and clean up activities. | Exposure to Be contamination in the air or surface which is a lung hazard. Exposure to radiological contamination. | Improper use of decontamination equipment can cause extremity or limb damage of workers. Improper clean up techniques including: Improper tent (if reqd.) decontamination or PPE usage. Improper ventilation usage. Improper waste disposal and handling. Improper training in the use of decontamination equipment can injure the user and coworkers. Improper or no use of RWPs | •Ensure all workers are trained as Be workers<br>•Ensure all RFETS Be prerequisites are met prior to job commencing<br>•Develop and implement a decontamination plan and AHA(s)/JHA(s) for the job<br>•Ensure all medical, equipment training and PPE preq. are met<br>•Ensure the proper air monitoring sampling is performed during the course of the job by IH&S personnel<br>•Ensure all posting and clearance sampling is performed<br>• Adequate RWP developed and followed |
| Perform radiological decontamination operations. | Exposure to radioactive materials internally and externally. Cell damage and damage to internal body organs can occur with overexposure to radioactive materials. Improper use of scabbling or other decontamination equipment can injure extremity or other limbs of workers by causing gash or cutting wounds. | Improper clean up techniques including: Improper tent , decontamination or PPE usage. Improper ventilation usage. Improper waste disposal and handling. No or improper training in the proper use of decontamination equipment. | •Ensure all workers are trained as rad. workers<br>•Ensure all RFETS rad. prerequisites are met prior to job commencing<br>•Develop and implement AHA(s)/JHA(s) for the job<br>•Ensure all medical, equipment, training, and PPE preq. are met<br>•Ensure the proper air and smear monitoring sampling is performed<br>•Follow the RWP instructions, including ALARA review if required |

## Table 2-4 Preliminary Hazard Analysis Overview

## Dismantlement And Decommissioning Phase

| Major Work Task | Hazard | Cause | Preventative Measures |
|---|---|---|---|
| Deenergize work areas and remove cables and wiring. | Electrical shock to body, cutting of extremities or body parts using wire strippers or other hand tools, falling off ladder or scaffolding, if used. Exposure to radiological contamination. | LO/TO not used properly, all workers not informed of LO/TO status. Improper use of hand tools, ladders or scaffolding. Improper lighting in room can cause improper use of equipment as well. Improper or no use of RWPs | •Utilize lockout and tagout procedures properly<br>•Inspect all hand tools before use<br>•Ensure all workers are trained in ladder, scaffolding and fall protection measures before using this equipment<br>•Develop and utilize task specific AHAs/JHAs<br>•Perform work area walkdown and conduct proper planning meetings and briefings<br>• Ensure all worker training is current<br>• Adequate RWP developed and followed |
| Move equipment out of rooms or area and transport utilizing forklifts, pallet jacks, or pick up trucks. | Back injuries, pinching, and extremity damage by dropping or falling objects. Internal and external body injuries by vehicle impact. Eye injuries by poking or dust particles in eye. Noise hazards. Exposure to radiological contamination. | Improper lifting techniques, job flow not planned properly, pre job walkdowns not performed, vehicle alarm systems not working, buddy system not used, lack of attention to detail, worker fatigue or no use or improper use of PPE. Improper or no use of RWP. | •Perform pre job walkdowns<br>•Develop AHAs/JHAs for job<br>•Use buddy system<br>•Ensure vehicle alarm and braking systems are working properly<br>•Utilize PPE properly<br>•Perform proper lifting techniques<br>•Perform pre job warm up exercises before lifting<br>•Do not attempt to move items that are stacked too high<br>•Cover all sharp edges with taping material<br>• Adequate RWP developed and followed |

## Table 2-4 Preliminary Hazard Analysis Overview (Continued)

## Dismantlement And Decommissioning Phase

| Major Work Task | Hazard | Cause | Preventative Measures |
|---|---|---|---|
| Cut out piping systems in rooms or work areas. | Cutting of body limbs or body parts with mechanical equipment. Piping falling on feet, pinch points of rolling pipe, liquid splashes if piping is not drained, springing of piping into body when cut. Exposure to radiological contamination. | Improper use of mechanical equipment including no training of equipment being used, piping not rigged or restrained properly, piping not drained prior to cutting. Improper or no use of RWP | •Proper training with cutting equipment •Develop and utilize AHA/JHA for job tasks •Rig and restrain piping properly •Utilize pipe caps after cutting to keep debris from falling out and cover sharp edges of pipes after cutting •Ensure piping has been properly taken out of service •Utilize proper PPE as described in the AHA/JHA and RWP • Adequate RWP/ ALARA review developed and followed |
| Rig piping and equipment out of rooms. | Bodily injuries due to falling objects or pinching of workers due to space limitations. Exposure to radiological contamination. | No rigging plan, improper rigging techniques, improper worker body positioning. Improper or no use of RWPs | •Develop rigging plan •Comply with all RFETS standards for rigging • Develop AHA/JHA and implement •Perform pre job walkdown and conduct pre-evolution •Walkdown rigging path - all phases •Perform pre and post job inspections on all rigging equipment •Ensure all workers are properly trained • Adequate RWP developed and followed |

## Table 2-4 Preliminary Hazard Analysis Overview (Continued)

## Dismantlement And Decommissioning Phase

| Major Work Task | Hazard | Cause | Preventative Measures |
|---|---|---|---|
| Packaging waste into containers for storage and shipment. | Pinching of extremities on container lids, barrels rolling on feet, back strains, foot injuries as vehicle wheels impact or roll onto extremities, cuts/gashes of hands by tooling.<br>Exposure to radiological contamination. | Improper lifting and handling techniques, wrong tooling used to put lids on containers, pallet jack or forklift ramming into workers, job rushed or not planned properly.<br>Improper or no use of RWPs | •Develop AHA/JHA and implement<br>•Review lessons learned from previous waste handling operations<br>•Develop proper tool list before starting job<br>•Ensure all waste containers are properly staged before starting job<br>•Ensure all building notifications are made before moving and handling waste<br>•Follow all RFETS requirements for waste handling and movement<br>• Adequate RWP developed and followed |
| Cut out and remove gloveboxes in rooms or work areas. | Pinch points, foot and hand injuries, cutting of hands/arms, eye and head injuries, burning of skin or extremities.<br>Exposure to radiological contamination. | Improper use of grinders or no guards on grinders, cramped working conditions, bad lighting, limited vision, breaking of leaded glass, plasma slag burns through clothing, improper use of PPE.<br>Improper or no use of RWPs | •Proper training with cutting equipment<br>•Develop and utilize AHA/JHA for job tasks<br>•Rig and restrain gloveboxes properly<br>•Utilize pipe caps on glovebox piping after cutting<br>•Ensure gloveboxes have been properly taken out of service before work starts<br>•Utilize proper PPE as described in the AHA/JHA<br>•Perform tooling inspections before each use<br>• Adequate RWP/ALARA review developed and followed |

## Table 2-4 Preliminary Hazard Analysis Overview (Continued) Dismantlement And Decommissioning Phase

| Major Work Task | Hazard | Cause | Preventative Measures |
|---|---|---|---|
| Construct and utilize scaffolding to perform job tasks. | Fall hazards, workers struck by failing objects, hand injuries. Exposure to radiological contamination. | No use of fall protection, improper training, no use of PPE, improper use of tooling, improper rigging and transport of scuffling pieces, no scaffold inspections, scaffold collapse. Improper or no use of RWPs | •Proper training for scaffold erection and use •Fall protection and rigging training •Proper use of PPE •Develop AHA/JHA •Perform documented scaffolding inspections •Ensure all scaffolding is tagged properly •Ensure all toeboards and siderails are in place • Adequate RWP developed and followed |
| Perform decontamination operations using scabbling machines, hydolazing techniques, hand wiping methods or by applying stripcoat decontamination paint. | Extremity injuries of hand and feet by gouging, cutting or impact. Inhalation, ingestion or skin exposure to radioactive materials and ammonia vapors. Electrocution. Falls. | Improper or no training on equipment used for decontamination, improper work area ventilation, improper use of PPE, no job planning. No LO/TO of work area. No fall protection. | •Conduct mock up training on decontamination equipment and stripcoat operations •Develop AHA/JHA for job tasks •Ensure work area is properly ventilated before applying stripcoat •Ensure LO/TO operations have been performed •Wear prescribed PPE as determined by IH&S and Rad Protection •Utilize fall protection, when required •Follow all AHA/JHA and RWP requirements |
| Perform final cleanup of building/structure. | Tripping, falls, head wounds, pinch points, punctures, contusions, skin contamination, inhalation, absorption of radioactive materials. | Housekeeping, falling objects, non use of PPE, improper use of PPE, sharp edges or sharp objects not protected, no fall protection, improper ladder use. | •Perform weekly housekeeping inspections •Utilize fall protection, when applicable •Develop AHA/JHA for job task •Utilize PPE properly and as described by IH&S and Rad Protection •Follow all ALARA reviews, AHAs/JHAs, and RWP |

## Table 2-4 Preliminary Hazard Analysis Overview (Continued)

## Dismantlement And Decommissioning Phase

| Major Work Task | Hazard | Cause | Preventative Measures |
|---|---|---|---|
| Perform final survey of building. | Falls, head wounds, electric shock, abrasions, cuts, pinches. | No fall protection, improper use of instrumentation, working in tight spaces, tripping hazards, bad housekeeping , improper termination of wiring. | •Develop AHA/JHA<br>•Perform pre job walkdowns<br>•Utilize fall protection, when required<br>•Complete ladder training, as required<br>•Utilize two person rule when working in elevated locations<br>•Procure confined space permits and training, when required<br>•Follow all AHA/JHA and RWP requirements |
| Perform demolition activities of building/structure. | Body contusions, head injuries, suffocation, fatalities, breathing hazards. | Wetting of concrete surfaces not utilized, barriers not used properly, thorough inspections of work area not performed prior to demolition activities, lack of attention to detail. | •Develop job AHA/JHA<br>•Perform pre job walkdowns<br>•Utilize PPE as prescribed by IH&S<br>•Maintain wetting of debris with fire hoses as demolition occurs |

# 3. Organizational Responsibilities

Figure 3-1 depicts key project positions for the Building 779 Closure Project. An important feature of this organization is line management responsibility for all aspects of environmental protection, health and safety of the workers and public, as well as facility operations within the requirements of the facility Authorization Basis.

## *3.1 Project Manager*

The Closure Project Manager (PM) has overall responsibility for all aspects of the Building 779 decommissioning and demolition. The PM ensures that federal, state, local and DOE requirements, policies, and procedures are complied with. He/She ensures that adequate resources are applied to project tasks in a manner which places safety as the highest priority. He/She reports directly to the Kaiser-Hill Vice President of Closure Projects as well as the Safe Sites of Colorado and Rocky Mountain Remediation Services presidents.

## *3.2 Project Safety Officer*

The Project Safety Officer (PSO) is responsible for development of the HASP and providing technical guidance to the project staff at all levels on matters involving health and safety, industrial hygiene. The PSO also performs other duties including but not limited to:

- safety audits and inspections
- technical interpretation of OSHA and DOE regulations
- personal air sampling
- accident investigations
- area sampling
- characterization sampling
- Job Hazard Analyses and/or Activity Hazard Analyses
- procedural reviews
- assists with ISM and EWP implementation

The PSO reports directly to the PM.

## *3.3 Joint Company Union Safety Committee Representative*

Joint Company Union Safety Committee Representative (JCUSCR) for the Building 779 Closure Project has been selected to interface with management on all safety concerns which originate from the collective bargaining unit and other Project personnel. He/She assists management with resolving issues in a timely manner. He/She is selected by the JCUSC with concurrence from management and deals primarily with safety issues which have direct impact on bargaining unit personnel. The JCUSC representative works with the PSO on technical issues and reports directly to the PM.

### 3.4 Radiological Safety Authority

The Radiological Safety Authority (RSA) has authority over all operations during the Building 779 Closure. The RSA implements the RFETS radiological control program and has duties including but not limited to:

- Performing ALARA reviews
- Developing RWPs
- Reviewing work packages
- Overseeing RCT personnel
- Interpreting radiological regulations
- Overseeing survey and monitoring

The RSA reports directly to the PM.

### 3.5 Integration Manager

The Integration Manager (IM) has been involved in the 779 Closure Project since its inception. The IM developed all budgets, cost projections, estimates and schedules associated with the initial project plans. He/She is responsible for translating these plans into required actions using the Plan of the Day process. The IM incorporates input from workers and foremen to revise project plans based on constraints. The IM is responsible for project financial transactions including procurement, subcontracting, change orders etc., cost tracking etc. The IM also develops regulatory documentation including characterization reports and the DOP. The IM reports to the PM.

### 3.6 Work Authorization Team Manager

The Work Authorization Team Manager (WAT) is responsible for the operation and maintenance of the 779 complex. He/She ensures that all project tasks are executed in compliance with COOP directives and the Facility AB. Other duties include:

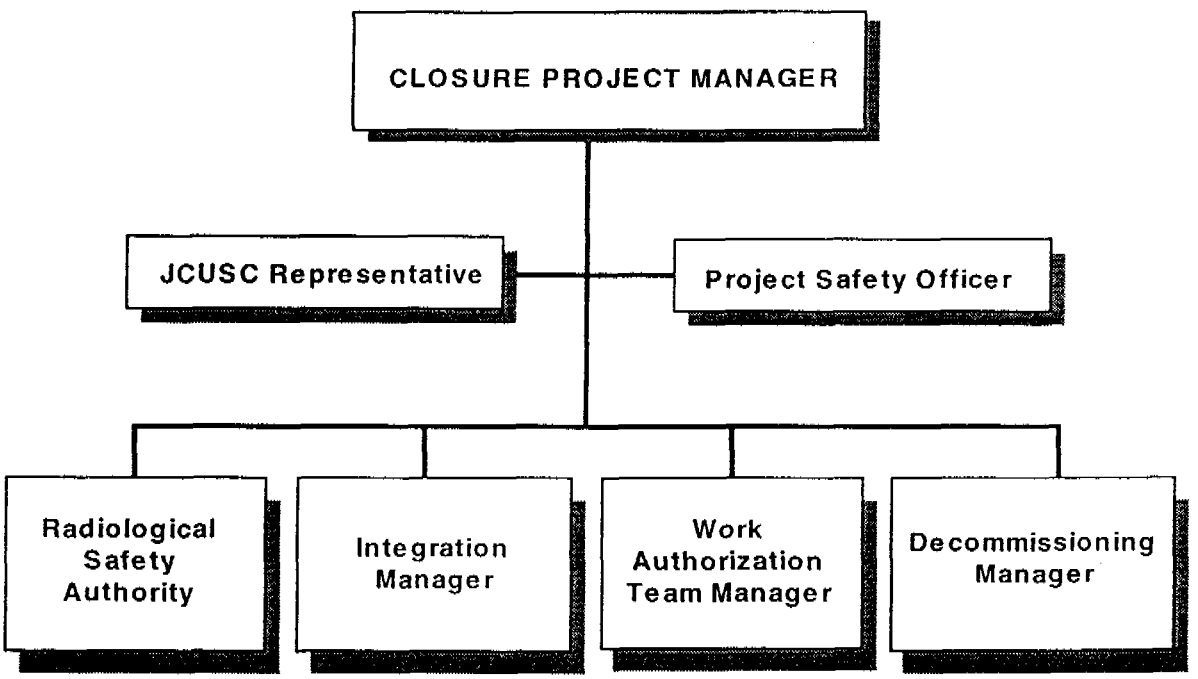
- Releasing work
- occurrence reporting
- maintenance of vital safety systems
- surveillances
- interfacing with DOE Facility Representatives
- Plant Action Tracking System

The WAT reports to the PM.

### 3.7 Decommissioning Manager

The Decommissioning Manager (DM) is responsible for executing the tasks necessary to D&D the 779 Cluster. This includes supervision of foremen and crews, providing technical advice to procedure writers and engineers, applying resources as necessary to achieve project objectives. Other duties include ISM, EWP implementation, AHA/JHA development, pre job briefings. The DM reports directly to the PM.

**Figure 3-1Building 779 Closure Project Chain of Command**




### 3.8 Site Workers

Site workers comply with the task-specific HASP, AHAs/JHAs, and applicable RFETS practices, procedures, and policies. They are responsible for reporting any accidents, injuries, or near misses immediately to their Foreman or Supervisor. They assist with development of AHAs/JHAs and participate in the EWP process as required. They assure all required training is current.

### 3.9 Visitors

Visitors entering the work area during field activities will receive a briefing on the requirements of this HASP. In addition, visitors must meet the training requirements for Building 779 access (which includes either General Employee Radiological Training or RFETS Short-Term Visitor Orientation for escorted access). Visitors must wear dosimetry and other PPE, as required by the RWP, HASP, and AHAs/JHAs. Normally, visitors will

not perform hands-on work activities. Training for visitors shall be commensurate with the areas being visited and meet the requirements of the Site RCM, Article 622 or 657.

Visitors who enter any area of the activities where they may be exposed to hazards of the project must be trained on the requirements of this HASP. Visitors who enter the work area or sign in under the RWP, who do not meet the minimum training requirements shall not be permitted to perform hands on work and must be escorted by a site worker who meets minimum training requirements.

# 4. Hazard Assessment

## *4.1 Development of an Activity Hazard Assessment/Job Hazard Analysis*

For tasks which pose exposure to, with, or around potential health and safety hazards, an Activity Hazard Analysis (AHA/JHA) will be developed to describe the hazards as well as the actions necessary to eliminate or mitigate those hazards. This AHA/JHA will be developed through an Enhanced Work Planning session, which will include the craft involved in the work, the supervisor of that team, the Project Safety Officer if industrial hazards are present, and the Radiological Site Authority, if radiological hazards are present.

The first step in this process will be to identify the hazards which exist. It is important to remember that hazards other than those already known and characterized may exist. For example, a team may find unexpected contamination, either radiological or chemical, while involved in closure activities. Therefore, special care must be taken to ensure that all potential hazards are included in the analysis.

Once the hazards are identified, the guidance documents concerning these hazards must be reviewed. It is the strategy in this project to comply with all Federal, State and DOE regulations. RFETS requirements which are above and beyond these Federal, State and DOE requirements will be considered for implementation. If it is determined that a RFETS-imposed control is inappropriate for the task at hand (i.e. incorrect, overly conservative, etc.) a waiver will be requested, and once approved, the project will continue. At the same time the waiver is requested, a Document Modification Request will be issued for the procedure as well, to correct the issue for future projects.

From these steps, the hazards and necessary mitigative actions are determined, and an AHA is written and reviewed by the team performing the work. Concurrence is then obtained from the Supervisor, Project Safety Officer, and Radiological Safety Authority, or their designees.

## *4.2 Monitoring for Hazardous Constituents*

### 4.2.1 Chemical Hazard Monitoring

The need for chemical hazard monitoring will be determined by the Project Safety Officer or designee. All air sampling and monitoring will be performed in accordance with approved National Institute of Occupational Safety and Health or OSHA sampling methods using either direct reading instrumentation or personal air sampling as directed by the IH&S lead or designee. All instrumentation used will be calibrated in accordance with factory recommendations.

### 4.2.2 Radiological Hazard Monitoring

Air monitoring within the work areas will be performed using portable Continuous Air Monitors (CAMs) and portable air sampling equipment. The use of portable CAMs allows the project flexibility in monitoring locations, resulting in more effective monitoring. Training on the use and response of these monitors will be provided to all project personnel. Personnel monitoring for radiological hazards will be identified in RWPs and the ALARA job reviews. All radiological monitoring will be performed in accordance with the procedures contained in the RFETS HSP Manual, RFETS Radiological Control Manual, and the Radiological Operating Instructions (ROI).

## *4.3 Determining the hazards and controls*

For each activity, hazards will be identified. The table below is comprised of the typical hazards which may be identified, and point the reader to the appropriate document which delineates the requirements which mitigate that hazard.

It is important to recognize that there may be additional hazards from those identified below. Work teams will interact closely with the Radiological Safety Authority as well as the Project Safety Officer to ensure that appropriate mitigative actions are in place prior to work progressing.

## 5. Training Requirements

Training is an important component of safety within the 779 Closure Project. In order to determine the appropriate training, key project management and support personnel reviewed the entire list of available training at RFETS, and determined a minimum set of training for project personnel, based on their job activities. This minimum set of training can be either the RFETS version of the course, or an equivalent course provided by an outside organization.

For all personnel assigned to the 779 Closure Project at least _ time, the minimum set of training includes:

- training on the site and building alarms (i.e., "Alarms, Sounds and Responses");
- Building 779 Indoctrination;
- General Employee Training (GET);
- General Employee Radiological Training (GERT) (Note that Rad. Worker I or II or RCT qualification satisfies this requirement);
- training on the hazard communication program (i.e., HazCom CBT and HazCom checklist);
- a briefing on this HASP.

For specifically identified positions, the minimum set of training (or appropriate requalification) is identified on the Building 779 Project HASP Training Matrix, Table 5-1. Retraining frequencies will be maintained in accordance with the Training User's Manual

In addition to this minimum set of training required to support the 779 Closure Project, certain positions are identified in the SSOC Training Implementation Matrix (TIM), Rev. 1, as requiring qualification in accordance with DOE Order 5480.20A. These qualification requirements are not addressed in Table 5-1, however they are required to be met for these individuals to perform their functions. In developing the qualification programs for the individuals identified in the TIM, needs analyses or job-task analyses needed to be performed. For all identified positions except the Configuration Control Authority (CCA), Stationary Equipment Operator (SOE), and SOE foreman a needs analysis was performed. This was completed by virtue of management, PSO, RSA and training subject matter expert involvement in the development of Table 5-1, as was as management involvement in development of specific qualification documents.

In addition to Table 5-1 and TIM training requirements, other courses may be identified as potentially required to perform specific scopes of work or tasks. To determine if additional training is required, a review will be performed of the training necessary for safe performance prior to each task, during the creation of the AHA/JHA. Any training which is in addition to the minimum set of training will be identified on the AHA/JHA form and must be completed prior to starting the activity.

Additional training, in the form of AHA/JHA briefings, pre-job briefings, "tool-box" safety training, regular safety meetings, or continuing training may be required or occur. Briefings shall be conducted whenever this HASP is technically revised and where those revisions impact field conditions, when new AHAs/JHAs are developed or revised due to work conditions changing.

As new training requirements are identified at RFETS, the Technical Support Manager with the training department will review the requirement against the work being performed in this project. If applicable, the training will be added to the HASP Training Matrix.

# Figure 5-1 779 Closure Project HASP Training Matrix

| | Proj. Mgr | Deputy Proj. Mgr | RSA | RC Foremen | Rad. Engs. | RCTs | PSO | WAT Mgr. | CCAs | S&M Mgr. | SOEs | Util. Worker | D&D Mgr. | D&D Foremen | D&D Worker | Support Crafts | D&D Waste Team | EOs & PSs & EMs | Waste Mgr. | Tech. Supp. Mgr. | Tech. Supp. Eng. | Tech. Supp. QEVs | Tech. Supp. Env. Support | CSO | Crit. Safety Eng. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Alarms | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| Asbestos Awareness for 779 (NOTE 1) | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | X | X | | X | X | |
| Enhanced Work Planning (NOTE 1) | X | X | X | X | X | X | X | X | X | X | X | | X | X | X | X | X | X | X | X | X | X | X | X | X |
| Beryllium Ops | | | | | | X | X | | | | | | X | X | X | X | X | X | | | | | | | |
| OJT/Basic Instructor Training | | | | X | | | | X | | X | | | X | X | | | | | | | | | | | |
| Building 779 Indoc. | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| Computer Security | X | X | X | X | X | | X | X | X | X | | | X | X | | | | | X | X | X | X | X | X | X |
| Confined Space | | | | | | | X | | | | | | X | X | X | X | X | | | | | | | | |
| Elect. Safety for Elect. Workers (NOTE 2) | | | | | | | | | | | | X | | | | X | | | | | | | | | |
| Elect. Safety for 779 (NOTE 1) | X | X | X | X | X | X | X | X | X | X | X | | X | X | X | X | X | X | | | X | | X | X | |
| Fall Protection | | | | | | | | | | | X | | X | X | X | X | X | | | | | | | | |
| GET | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| GERT (NOTE 3) | X | X | X | | X | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| GERT/Rad Worker Annual Refresher | X | X | X | | X | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| Glovebags | | | | | | | | | X | | | | X | X | X | X | X | X | | | | | | | |
| JPM/Glovebags | | | | | | | | | | | | | X | X | X | X | X | X | | | | | | | |
| Glovebox | | | | | | | | | | | | | X | X | X | X | X | X | | | | | | | |
| Hazard Comm Indoc Checklist | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| Hazard Comm CBT | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| Health & Safety Plan Briefing for 779 (NOTE 1) | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| 40 Hr. OSHA | | | X | X | X | X | X | X | X | X | X | | X | X | X | X | X | X | | | | | X | | |
| 8 Hr. Super. | | X | X | | | | | X | | X | | | X | X | | | | | | | | | | | |
| 8 Hr. OSHA Ref. | | | X | X | X | X | X | X | X | X | X | | X | X | X | X | X | X | | | | | X | | |
| Hearing Conserv. | | | | X | X | X | X | X | X | X | X | | X | X | X | X | X | X | | | | | X | | |
| Ladder Safety (NOTE 4) | | | | | | | | | | X | X | | | | | | | X | | | | | | | |
| Lead Awareness | | | | X | | X | X | | | | X | | X | X | X | X | X | X | | | | | | | |
| LO/TO | | | | | | | | X | X | X | X | | X | X | X | X | X | X | | | | | | | |
| LO/TO Application | | | | | | | | X | X | X | X | | X | X | X | X | X | X | | | | | | | |
| Nuc Crit Safety Super | | | | | | | | | | | | | | | | | | | | | | | | | |

NOTE 1: 779-specific briefing. NOTE 2: For electricians only. NOTE 3: GERT is not required if RCT, Rad Worker I or II qualified. NOTE 4: Ladder Safety is not required if Fall Protection trained.

# Figure 5-1 779 Closure Project HASP Training Matrix

| | Proj. Mgr | Deputy Proj. Mgr | RSA | RC Foremen | Rad. Engs. | RCTs | PSO | WAT Mgr. | CCAs | S&M Mgr. | SOEs | Util. Worker | D&D Mgr. | D&D Foremen | D&D Worker | Support Crafts | D&D Waste Team | EOs & PSs & EMs | Waste Mgr. | Tech. Supp. Mgr. | Tech. Supp. Eng. | Tech. Supp. QEVs | Tech. Supp. Env. Support | CSO | Crit. Safety Eng. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuc Crit Fiss Mat | | | | | | | | | | | | | | | X | | X | X | | | | | | | |
| Nuc Crit Supt Person | | | | X | | X | | | | | | | | | | X | | | | | | | | | |
| Nuc Material Safeguards | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| NSP 10 Training | | | | | | | | | | | | | | | X | X | X | X | | | | | | X | |
| NSP 3.12 Training | | | | | | | | | | | | | | | X | X | X | X | | | | | | | |
| PremAire | | | | | | | X | | X | | | | X | X | X | X | | | | | | | | | |
| Pressure Safety | | | | | | | | | | | X | | X | X | X | X | X | X | | | | | | | |
| Rad Source Cust. | | | X | | | | | | | | | | | | | | | | | | | | | | |
| Rad Worker II | X | X | X | | X | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| Supervisors | X | X | X | X | | | | X | | X | | | X | X | | | | | X | X | | | | | |
| RCRA CBT | | | | | | X | | X | | X | X | | | X | X | X | X | X | | | | | X | | |
| RCRA Cust. Qual | | | | | | | | | | X | | | | | | | | | | | | | X | | |
| RCRA Waste Mgmt | | | | | | | | X | | X | | | | X | X | X | X | X | | | | | X | | |
| RCRA/Waste Generator Annual | | | | | | | | X | | X | X | | | X | X | X | X | X | | | | | X | | |
| Respirator Indoc (Super) | | | X | X | | | | | | X | | | X | X | | | | | | X | | | | | |
| Respirator Indoc (User) | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | | X | X | |
| Respriator Fit Test | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | | X | X | |
| Scaffolding Safety | | | | | | | X | | | | | | | | X | X | | | | | | | | | |
| PAPR | | | | | | | X | | | | | | | | | | | | | | | | | | |
| Tamper Indicating Devices | | | | | | | | | | | | | X | X | X | X | X | | | | | | X | | |
| TID-OJT | | | | | | | | | | | | | X | X | X | X | X | | | | | | X | | |
| WG Classroom | | | | | | | | X | | X | X | | | X | X | X | X | X | | | | | X | | |
| WSRIC | | | | | | | | X | | X | X | | | X | X | X | X | X | | | | | X | | |
| WG Qual | | | | | | | | X | | X | X | | | X | X | X | X | X | | | | | X | | |
| Medical Surv (Respirator) | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | | X | X | |
| Medical Surv (Berylium ) | | | | | | X | X | | | | | | | | X | X | X | | | | | | | | |
| Medical Surv (Lead) | | | | | | | X | | | | | | | | X | X | X | | | | | | | | |
| Medical Surv (Asbestos) | | | | | | | X | | | | | | | | X | X | X | | | | | | | | |
| Medical Surv (Haz Waste Worker) | | | X | X | X | X | X | X | X | X | X | | X | X | X | X | X | X | | | | | X | | |

NOTE 1: 779-specific briefing. NOTE 2: For electricians only. NOTE 3: GERT is not required if RCT, Rad Worker I or II qualified. NOTE 4: Ladder Safety is not required if Fall Protection trained.

## 6. Personal Protective Equipment (PPE) Program

PPE for the project will be selected by an IH&S personnel for the specific hazards to be encountered. Workers will be trained in the use, maintenance, and disposal of the PPE assigned to them in accordance with 29 CFR 1910.132 and the RFETS respiratory protection program.

As job conditions dictate, the Project Safety Officer will evaluate the specific PPE for that particular task(s). This may involve the use of level A (the most protective), level B, level C, or level D (the least protective) PPE. When prescribing PPE, the following factors will be considered:

- Permeability, degradability, penetrability by specific agents expected for the job task(s)
- Heat/cold (thermal effects)
- Durability
- Flexibility
- Ease of decontamination
- Compatibility with other equipment
- Special conditions (fire, explosive, electrical, chemical, radiological, $O_2$ deficient atmospheres, etc.)

At a minimum, personnel performing D&D activities shall wear the following personnel protective equipment:

- Safety Glasses with Side Shields
- Hard Hats (in posted hard hat areas)
- Safety Shoes
- Appropriate work clothes; and
- Additional PPE as prescribed by the RWP and AHA/JHA

## 7. Medical Surveillance

Project personnel who are or may be exposed to hazardous substances or health hazards will receive hazardous waste worker medical surveillance as specified below:

| Exposure to: | Medical Surveillance Required: |
|---|---|
| Lead | Baseline blood test for lead and zinc protoporphyrin, in accordance with 29 CFR 1926.62. |
| Beryllium | Evaluated for inclusion in the Be medical surveillance program. |
| Asbestos | Medical monitoring requirements as defined in 29 CFR 1926.1101 and the site-specific Health And Safety Manual, (HSP-9.09). |
| Haz. Waste Worker | Medical monitoring requirements as defined in 29CFR1926.65 |
| Nuclear Worker | Medical monitoring requirements as defined in DOE 5480.8A |

# 8. Site Control Measures

## 8.1 Site Communications

Project personnel will have access to telephones and/or radios located in the immediate area. Emergency information will be communicated to the Building 779 Cluster by way of the Life Safety/Disaster Warning (LS/DW) system (reference Figure 8-1 to view a map of the Building 779 Cluster layout).

## 8.2 Work Zones

The project site will be posted as a work area and access to the area will be limited to those personnel working on the project. Additional work zones such as regulated areas for lead, asbestos, beryllium, and radiological hazards will be established in accordance with the applicable requirements and will be indicated in the AHAs/JHAs. Building 779 Surveillance and Maintenance personnel will require access due to ongoing activities; however, they will be required to comply with the applicable portions of this HASP and the associated AHAs/JHAs. Operations and Maintenance personnel shall be briefed on the HASP and sign in on the briefing form.

## 8.3 Housekeeping

During the decommissioning process of the Building 779 Cluster, housekeeping will be of utmost importance. HSP 13.08 and OSHA Standard 29 CFR 1926. 25 will be utilized as the minimum standards for housekeeping.

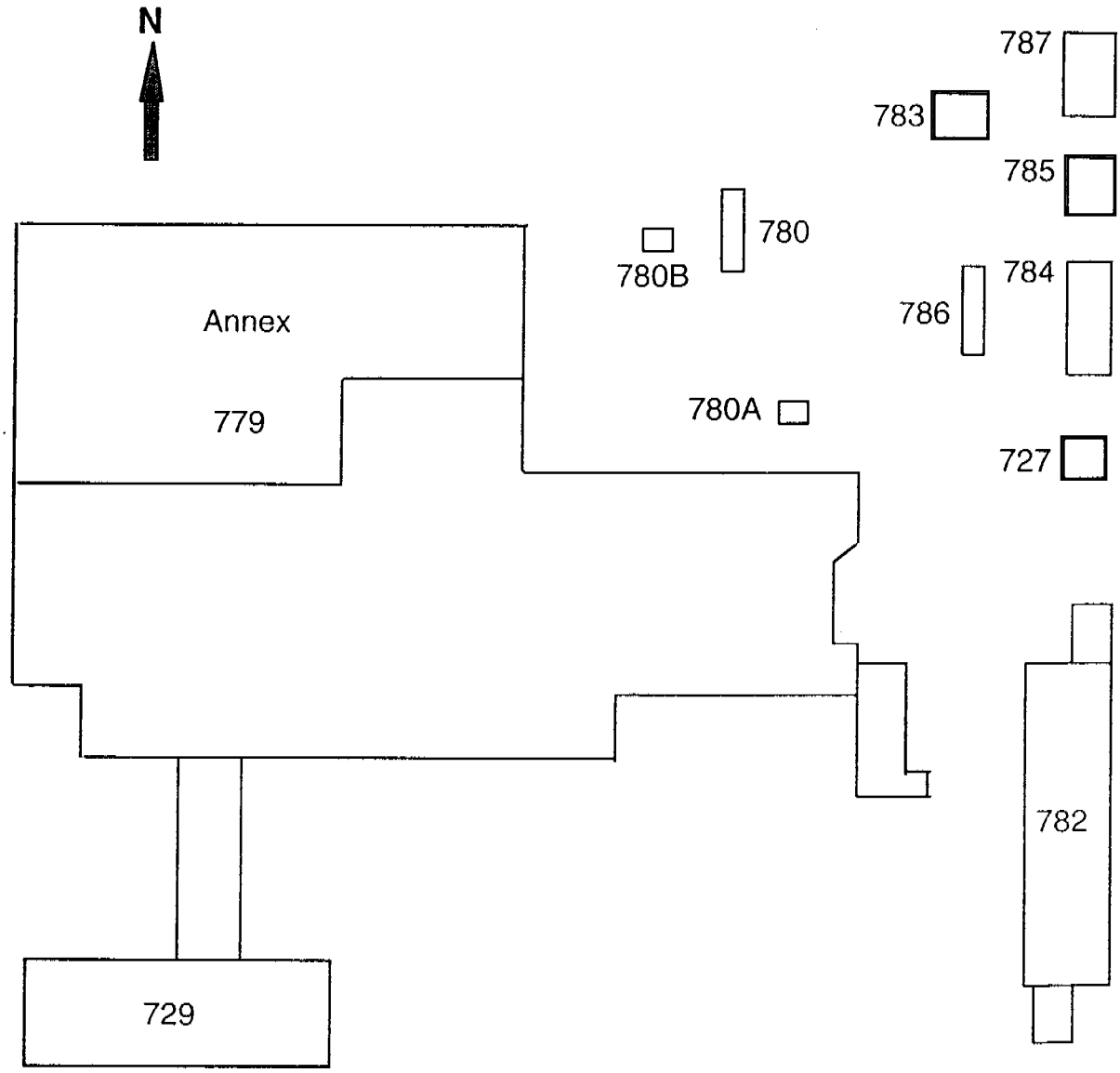
## 8.4 Site Security

The Building 779 Cluster is in a controlled access area. Entry into the Building 779 Cluster is limited to personnel requiring access; for routine operations, maintenance, and performing activities addressed by this plan. Personnel requiring access must have completed the required training, medical surveillance, and wearing the prescribed PPE, as well as signed-in on the RWP and AHA/JHA, as applicable.

## 8.5 Sanitation

Sanitation facilities, potable water, and change locations will be available and located in close proximity of work areas, and ensure compliance with 29 CFR 1926.51.

# Figure 8-1 Building 779 Cluster Layout




| | |
|---|---|
| 727 | Emergency diesel generator facility serving Building 779. |
| 729 | Facility containing filter plenums and emergency diesel generator. |
| 779 | Research and Development Center. |
| 780 | Paint/Storage Facility. |
| 780A | Metal Storage Facility. |
| 780B | Gas Bottle Storage Facility. |
| 782 | Filter Plenum Exhaust Enclosure For Building 779 Exhaust. |
| 783 | Building 779 Cooling Tower Pump House. |
| 784 | Building 779 Cooling Tower Support Facility (A,B,C,D). |
| 785 | Building 779 Cooling Tower Support Facility. |
| 786 | Building 779 Cooling Tower West Chiller. |
| 787 | Building 779 Cooling Tower East Chiller (A,B,C,D). |

## 9. Decontamination Procedures

Specific decontamination procedures, as applicable and depending on the hazard, will be addressed in the site Radcon Manual, the Site Health and Safety Practices Manual, and this HASP.

| Hazard | Decontamination Regulation |
|---|---|
| RADIOLOGICAL | Decontamination for potential radiological contamination will be performed in accordance with the applicable procedures in the HSP Manual and Radiological Operating Instructions Manual and as specified in the RWP. |
| LEAD | Decontamination of lead will be performed in accordance with 29 CFR 1926.62 (g), (h), (i), and project-specific Lead Compliance Plans. |
| ASBESTOS | Removal of ACMs will be performed in accordance with 29 CFR 1926.1101, Environmental Protection Agency 40 CFR 763 and the HSP Manual. |
| BERYLLIUM (Be) | Decontamination for Be will be performed in accordance with the RFETS HSP Manual, (HSP 13.04). |

## 10. Emergency Response

### *10.1 Pre-Emergency Planning*

All field project personnel will be informed of the emergency response procedures contained in this plan and the site-specific Building 779 Emergency Plan, (BEPLAN-14.779). Building 779 management will be aware of project activities by way of the 779 Plan-of-the-Day meeting.

### *10.2 Communication*

In the event of an incident requiring emergency response, personnel shall call extension 2911 by telephone. Also, personnel shall report emergencies to the 779 Configuration Control Authority and the Project Manager. These personnel can be reached via phone, radio and pager communications, using the facility call list.

### *10.3 Safe Distances And Places Of Refuge*

In the event of an incident requiring emergency evacuation of the facility, all personnel will evacuate, follow LS/DW instructions and assemble at the designated 779 assembly areas. All alarms and response procedures shall be followed in Building 779 and supporting facilities.

### *10.4 Evacuation Routes*

Evacuation routes are posted at various locations within the building(s) and project personnel will be informed of the routes during pre-evolution briefings.

### *10.5 Emergency Medical Treatment And First Aid*

Emergency medical assistance can be obtained by calling extension 2911 by phone. Site Emergency Response personnel will determine if off-site medical transportation and assistance is required. Individuals requiring non-emergency medical treatment or first aid will be transported to the Occupational Health Clinic, Building 122 for treatment. The Configuration Control Authority and the Project Manager shall be immediately notified of any such incidents.

### *10.6 PPE And Emergency Equipment*

The project will maintain available the PPE necessary to perform work as outlined in the AHA/JHA. In addition, fire extinguishers will be available at the project site. The RFETS Fire Department and HazMat Team maintains a supply of additional emergency equipment.

## 11. Post-Construction Activities

The Project Manager shall prepare a final report detailing the safety and health performance during the construction activity or project. The final report shall be in the form of self-assessment and will evaluate the safety and health performance of all subcontractors, lower-tier subcontractors, and vendors.

The final report shall include the following:

- Copy of the Daily Log maintained by the Project Safety Officer;
- Copies of all accident and incident investigation reports;
- Total number of first-aid cases incurred;
- Total number of Radiological Deficiency Reports;
- Copies of the OSHA 200 Logs for the project and all subcontractor personnel;
- Final totals of employee hours worked for the project and all subcontractor personnel;
- Copies of all OSHA, DOE, and RFETS safety and health training records, safety meeting reports, and attendance roster associated with the performance of the construction project or activity.

## 12. Management Assessments

It is important to perform periodic assessments on the activities being conducted to determine adherence to applicable requirements and implementation of best management practices. The Management Assessment Program (MAP) is the tool to be used to perform such assessments for this project. The MAP identifies and documents findings, observations, and noteworthy practices; initiates required corrective actions; and reports the effectiveness, adequacy, efficiency, and economy of programs, activities, and processes to the appropriate level of management.

Assessments shall be based on a graded approach commensurate with:

- The relative importance or risk to safety, safeguards, security, and the environment;
- The magnitude of any hazard involved;
- The life cycle stage of the facility;
- The programmatic mission of the facility;
- The particular characteristics of the facility; and
- Any other relevant factor

The performance of MAP assessments is not restricted to those personnel who have an organizational title of manager or supervisor but may include others, such as leads, subject matter experts, etc. However, all assessments will be reviewed by key management personnel to ensure management involvement in determining deficiencies and corrective actions.

The assessments scheduled to be performed during this project are listed Table 12-1. The master list will be held by the Technical Support Manger. This list may be modified by the Project Manager as appropriate to support the overall goals and objectives of the project.

**Figure 12-1 Management Assessment Schedule**

| | Jan '98 | Feb '98 | Mar '98 | Apr '98 | May '98 | Jun '98 | Jul '98 | Aug '98 | Sep '98 | Oct '98 | Nov '98 | Dec '98 | Jan '99 | Feb '99 | Mar '99 | Apr '99 | May '99 | Jun '99 | Jul '99 | Aug '99 | Sep '99 | Oct '99 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Decontamination & Decommissioning | X | | | X | | X | | | X | | | X | | | X | | | X | | | | |
| Training & Qualifications | | X | | X | | | | | | | | | X | | | | | | | | | |
| Occupational Safety & Health (includes Life Safety Code) | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| Radiation Protection | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | | |
| Waste Management | X | | | | | X | | | | | | | X | | | | | | X | | | |
| Emergency Preparedness | | X | | | | | | | | | | | | | | | | | X | | | |
| Nuclear Safety | X | | | | | | X | | | | | | X | | | | | | X | | | |
| Criticality Safety | | | X | | | | | X | | | | | | | | | | | | X | | |
| Conduct of Operations | X | | X | | X | | | | | | | | X | | X | | | | | | | |

## 13. Recordkeeping Requirements

The following records are required for this project:

- Occurrences shall be reported via the current RFETS Occurrence Reporting procedure. Lessons learned from previous occurrences, both at RFETS, as well as from other sites, shall be shared with the project team during safety meetings.

- Any individual experiencing an injury or illness shall report to the Occupational Health department for evaluation.

- All accident and incident investigation reports shall be completed as required by the Health & Safety Practices Manual.

  Note: RFETS requires that all occupational injuries or illnesses, motor vehicle accidents resulting in more than $500.00 damage, personal injury, property damage incidents, or fires resulting in $1,000.00 or more in damage be investigated and reported.

- A properly completed Individual Accident/Incident Report shall be submitted to Project Manager within 24 hours of the accident or incident.

- The following information shall be provided to the Project Manager by the third working day of each month or at the completion of the construction activity, whichever comes first:

  1. Requested information pertinent to first-aid cases.
  2. Employee hours worked.
  3. OSHA incidence rates for the project in progress or completed.

- The same statistical information shall be submitted for any construction subcontractor, lower-tier subcontractor, and vendor who has performed work on the project.

- Any subcontractor performing construction at RFETS shall maintain and make available for review an up-to-date OSHA 200 Log pertinent to construction activities at RFETS.

- The following records shall be maintained for subcontractors, lower-tier subcontractors, and vendors during the performance of the project:

  1. First-aid cases
  2. Employee hours worked
  3. OSHA 200 Logs
  4. OSHA incident rates

# Appendix A

## ACTIVITY HAZARD ANALYSIS

| ACTIVITY HAZARD ANALYSIS REPORT NUMBER: | PAGE 1 OF |
|---|---|
| JOB/PROJECT: | |
| ACTIVITY DESCRIPTION: | |

| STEP | POTENTIAL HAZARD | PROTECTIVE CONTROL MEASURES |
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| H&S TRAINING | SPECIAL EQUIPMENT |
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| SUPERVISOR CONCURRENCE: |
| SITE SAFETY OFFICER CONCURRENCE: |
| RAD SAFETY OFFICER CONCURRENCE: |

# ACTIVITY HAZARD ANALYSIS

| AHA CONTINUATION SHEET<br>ACTIVITY HAZARD ANALYSIS REPORT NUMBER: | | |
|---|---|---|
| JOB/PROJECT: | | |
| ACTIVITY DESCRIPTION: | | |
| STEP | POTENTIAL HAZARD | PROTECTIVE CONTROL MEASURES |
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